(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) **International Patent Classification:** Not classified

(21) **International Application Number:**
PCT/US2005/003412

(22) **International Filing Date:** 27 January 2005 (27.01.2005)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**
60/539,822   27 January 2004 (27.01.2004)   US

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(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
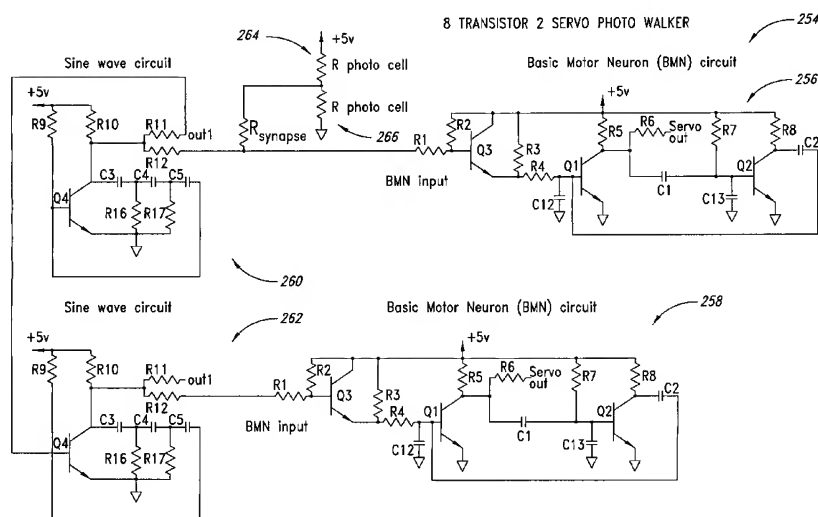
(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) **Title:** SYNTHETIC NERVOUS SYSTEM FOR ROBOTICS

(57) **Abstract:** A synthetic nervous system capable of rudimental learning and self-organization for robotic applications having a control circuit and servo actuators using oscillating continuously variable analog voltages to mimic natural bio-neural processes. Simple oscillators capable of being modulated in frequency, phase, amplitude, and DC offset act as analog processing elements or oscillating infinite state machines. A central pattern generator utilizing periodic, quasi-periodic, or chaotic oscillators or phase shifters, or a combination thereof, along with a basic motor neuron circuit enables multiple servos to coordinate their behavior to enable bio-inspired locomotion such as walking, swimming, flapping, crawling, and the like. Sensors interfaced to the control circuit provide a wide range of adaptive behavior such as following a light source, avoiding an obstacle, and shifting balance point. Overlapping or concurrent sensor inputs can provide complex behavior with minimal circuitry.